# NEW POTATO WEEVILS FROM ANDEAN SOUTH AMERICA

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During the year 1913 a number of shipments of South American potatoes for experimental propagation by the Department of Agriculture have been intercepted by Messrs. E. R. Sasscer and H. L. Sanford, inspectors of the Federal Horticultural Board, because of more or less serious infestations by weevils. In most of the shipments the weevils were alive. Those received early in the summer were partly immature, while in later shipments they were all mature. When the material was shipped it was supposedly free of insect pests, and in fact it is quite possible to find a potato apparently whole which contains a weevil within. Mr. C. H. T. Townsend, the Entomologist of Peru, writes that the work of the weevils is often undetected until the potatoes are cooked and served on the table. It can therefore be seen how readily a shipment of South American potatoes received for planting purposes might be passed by quarantine officers and perhaps be the source of a very dangerous pest to the American potato industry.

As a result of the finding of weevils in many shipments of potatoes, the Federal Horticultural Board has taken action excluding South American potatoes from the United States. This article has therefore been prepared with the view of assisting the inspectors in their work and also to place on record descriptions of the weevils in question.

The three species of weevils so far found are very different in appearance and can be readily identified from the illustrations published herewith.

A notice of the finding of a species of weevil known as *Rhigopsidius tucumanus* Heller in potatoes shipped by Mr. W. F. Wight from points in Peru, Bolivia, and Chile has been published.[1] Since the publication of this note two other species, each representing a new genus and a new species, have been discovered.

The second species found in shipments of potatoes from Peru was obtained alive on July 9, 1913, by Mr. Sasscer in a potato sent by Mr. Wight from the mountain districts of Peru. The adult weevil was found just under the skin of the potato in a small cell which had evidently served as a feeding cell for the larva. From the material received it is judged that the larva does not bore extensively in the potato.

[1] Sasscer, E. R., and Pierce, W. Dwight. Preliminary report of the finding of a new weevil enemy of the potato tuber. Proc. Ent. Soc. Wash., v. 15, no. 3, p. 143–144, pl. 4–5, Oct. 2, 1913.

This weevil (Pl. XLI, figs. 1 and 2; and text figs. 1 and 2) forms the type of a new genus in the family Brachyrhinidæ, subfamily Entiminæ, tribe Ophryastini, to which our North American genera Ophryastes, Eupagoderes, Amydrogmus, and Tosastes belong. In Lacordaire's group "Leptopsides vrais" it is to be placed near Bastactes and Catasarcus, from both of which it differs by many characters. The descriptions which follow will serve to identify it.

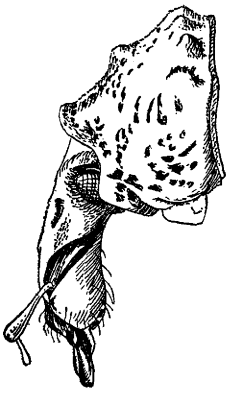


FIG. 1.—*Premnotrypes solani* Pierce: Lateral view of prothorax and beak.

**PREMNOTRYPES**, new genus.

Name derived from πρέμνον (root) and τρυπάω (to bore), meaning a root borer. Type of genus.—*P. solani*, n. sp.

Upper surfaces roughly sculptured throughout and closely squamose. Beak longer than head, enlarged at alæ, more or less distinctly depressed on the median line and at the sides; scrobes broadened behind and then flexed downward far from eyes; mandibles beneath not acutely toothed. Eyes vertical, elongate oval, pointed beneath. Antennæ with scape clavate, not greatly overlapping the anterior edge of the eyes; funicle 7-jointed, with first two joints elongate, the others shorter but not transverse; club elongate oval. Prothorax very tuberculate above and at sides; anterior lobes without vibrissæ, almost completely covering the eyes; base truncate, apex convex. Elytra with humeri rounded; striation irregular, with alternate intervals multituberculate. Body wingless. Thorax beneath with all parts short; mesothoracic side pieces unequal; metepimera broad. Intercoxal process broad; first two abdominal segments occupying over half the abdomen; first suture arcuate; second segment at least as long as the two following; fifth segment as long as the two preceding. Femora and tibiæ stout; tibiæ mucronate; tarsi with third joint bilobed and a little wider than the preceding joints, pubescent beneath; claws simple. The posterior tibiæ have the point of attachment of the tarsi terminal and close to the mucro. The apical surface is divided by a ridge into two unequal disks, the inner being the larger. The ridge passes just outside of the corbel.

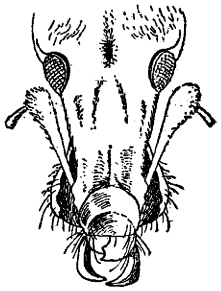


FIG. 2.—*Premnotrypes solani* Pierce: Frontal view of beak.

**Premnotrypes solani, n. sp.**

Length, 7 mm.; breadth, 3.75 mm. Color brown, with bronzy scales.

Beak longer than head and narrower than eyes, being narrowest at about the middle, where the flare of the scrobes begins to widen it. Alæ strongly flared, making apical portion of scrobes open above. Head with small tubercles above the eyes. Median line sharply defined, deepened at frontal fovea, then bifurcate to form a median ridge. The fine median line begins again on this ridge and extends to the apex. Beginning even with the front edges of the eyes the lateral impressions extend half the length of the beak. Apex of beak shining black, raised in an arcuate band, which causes the shining semielliptical nasal plate to stand obliquely. Mandibles shining black, with at least two inner teeth and with a long, shining, acute, deciduous piece with sharp inner edges. The right-hand deciduous piece has a tiny tooth on the inner edge before the middle. Antennal scrobes strongly flexed downward; scape clavate; funicle with all joints longer than wide, gradually decreasing in size toward

apex; club elongate, with the first two joints occupying over half the bulk. Head, beak, and scape densely clad with fine, silky, bronzed scales; funicle sparsely pubescent; club minutely pubescent.

Prothorax basally truncate, apically sinuate, strongly lobed over eyes, lobes without vibrissæ; coarsely punctured, finely squamose with yellowish to golden metallic scales; median line punctate, strongly impressed; surface with six basal, two discal, and four apical tubercles; widest behind middle at points of lateral basal tubercles.

Elytra at base no wider than thorax; humeri rounded; sides rounded, rough, wider than prothorax. Scutellum minute, triangular, depressed. Surface densely minutely scaly; striæ irregular, with small definite punctures; entire surface rough, but the third, fifth, and seventh intervals especially are raised by a series of small tubercles, which give the striæ a wavy direction.

Prosternum strongly arcuately emarginate, not more than one-half as long as pronotum. Anterior coxæ contiguous. Mesosternum taken up almost entirely by the coxæ, which are narrowly separated; side pieces unequal. Metasternum also short. Undersides and legs densely squamose.

Type.—Cat. No. 16689, U. S. National Museum.

The third species also belongs to a new genus quite closely related to Premnotrypes and belonging in the same tribe. Several specimens in a more or less perfect condition were found by Mr. Sanford in cells in potatoes received October 9, 1913, from Cuzco, Peru. This species breeds in a manner closely resembling that of the *Premnotrypes solani*.

This species (Pl. XLI, fig. 3; text fig. 3) may be identified from the following technical descriptions.

**TRYPOPREMNON**, new genus.

Name derived from τρυπάω (to bore) and πρέμνον (root), signifying a root-borer. The name is simply "Premnotrypes" reversed, because the two genera belong side by side.

*Type of genus.*—*T. latithorax*, new species.

Upper surfaces roughly sculptured throughout and closely squamose. Beak longer than head, enlarged at alæ, not impressed on median line except at frontal fovea and near apex; scrobes broadened behind and abruptly truncate; mandibles beneath sharply toothed. Eyes vertical, elongate oval, pointed beneath. Antennæ with scape clavate, not greatly overlapping the anterior edge of the eyes; funicle seven-jointed, joints 1 and 2 elongate, the others progressively shorter and the last three transverse, moniliform; club elongate oval. Prothorax very roughly molded; median line deeply impressed; anterior lobes without vibrissæ, almost completely covering the eyes; base truncate; apex sinuate. Elytra with humeri rounded; striation irregular, with alternate intervals rough and raised. Body wingless. Thorax beneath with all parts short; mesothoracic side pieces unequal; metepimera elongate, moderately broad. Intercoxal process broad; first two abdominal segments occupying over half the abdomen; the first suture arcuate; the second segment as long as the two following; fifth segment as long as the second. Femora and tibiæ stout; tibiæ mucronate; tarsi pubescent beneath, with third joint strongly bilobed, the lobes much wider than the preceding joints; claws simple. The posterior tibiæ have the point of attachment of the tarsi terminal and close to the mucro. The apical surface is divided by a ridge into two almost equal slanting disks, like a roof. The ridge runs directly to the middle of the corbel.

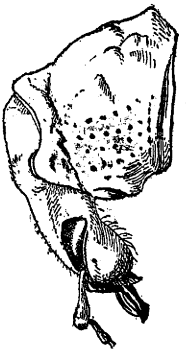


FIG. 3.—*Trypopremnon latithorax* Pierce: Lateral view of thorax and beak.

**Trypopremnon latithorax,** n. sp.

Length, 6 mm.; greatest breadth, 2.75 mm. Beak longer than head and narrower than eyes except at alæ; the dorsal squamose portion being gradually narrowed from the eyes to the apex. Alæ strongly flared, making the apical portion of the scrobes open above. Head very slightly tumid above the eyes. Median line distinct only to the frontal fovea, which is deeply depressed and very faintly indicated beyond this point. The lateral depressions on the beak are quite faint. Apex of beak shining reddish, with the nasal plate polished, ogival, and raised at apex. Mandibles shining, reddish; deciduous piece long, shining, acute, arcuate, with sharp edges and with a strong, acute, erect ventral tooth. Antennal scrobes strongly flexed downward, very much broadened and evanescent behind; scape clavate; funicle with first two joints elongate, the others progressively shorter and the last three transverse, moniliform; club elongate oval. Head, beak, and scape densely clad with fine, silky, bronzed scales; funicle sparsely pubescent; club minutely pubescent.

Prothorax basally truncate, apically sinuate, with very strong supraocular lobes, which are without vibrissæ; coarsely irregularly punctured, finely squamose with golden metallic scales; median line strongly impressed; surface very uneven with two basal and two discal elevations and with the sides very irregular, sinuate or bitumid; widest at posterior lateral tumidities.

Elytra at base narrower than thorax; humeri rounded; sides feebly convex. Scutellum triangular. Surface densely, minutely scaly; striæ irregular, with strong punctures, entire surface rough, but the third, fifth, and seventh intervals especially are raised by a series of tubercles, which give the striæ a wavy direction.

Prosternum strongly arcuately emarginate, hardly half as long as the pronotum. Anterior coxæ contiguous. Mesosternum taken up almost entirely by the coxæ, which are narrowly separated; side pieces unequal. Metasternum also short. Undersides and legs densely squamose.

Type.—Cat. No. 16690, U. S. National Museum.

Differs from *Premnotrypes solani* in the sculpturing of the beak, the shape of the scrobes and mandibles, and of the nasal plate, the absence of distinct tubercles on the head, the shape and sculpture of the prothorax, and the elytral striation. The third tarsal lobes are also much more distinct.

The weevil *Rhigopsidius tucumanus* Heller (Pl. XL) is, according to present information, more widely distributed than either of the other species. It was originally described by Heller [1] from Tucuman, Argentina, and was recorded in the note by Sasscer and Pierce,[2] quoted above,

[1] Heller, K. M. Neue Rüsselkäfer aus Central- und Südamerika. Ent. Ztg. Stettin, 1906. Bd. 67 (Heft 1), p. 7–9, pl. 1., figs. 3, 3a, and 3b.

[2] This weevil (Pl. XL) belongs to the family Psaliduridæ, subfamily Rhytirhininæ, tribe Rhytirhinini. The nearest North American insects are the species of the genus *Thecesternus* in the tribe Thecesternini of the same subfamily.

The following description, taken from Sasscer and Pierce (op. cit.), will identify this species.

Length, 9 mm., yellowish or purplish brown, with thickly matted vestiture of a cinereous shade mottled with black dots. Head concealed from above by prothorax and eyes, almost covered by the lateral prothoracic lobes. Beak moderately short, usually reposing in a deep pocket of the prothorax, which is posteriorly limited by the anterior coxæ. Beak medianly and laterally carinate to a cross carina between the bases of the antennal scapes. Scrobes deep and narrow from apex near tip of beak almost to eyes, then sharply deflected and broader in front of eyes. Scape stout, clavate. Funicle 7-jointed, the last joint apparently a part of the club. Club 4-jointed. Head at base sinuately impressed, with swellings above the eyes. Prothorax very irregularly sculptured but with a deep median furrow widened angularly at middle and also behind. Strial punctation deep but irregular. Intervals tumid behind. Legs stout. Tarsi with third joint not widely bilobed; tarsal claws simple. First and second abdominal segments long; third and fourth shorter than fifth.

in shipments received May 24, 1913, from Mr. Wight, who collected the material at Cuzco, Temuco, and Arequipa, Peru; Oruro, Bolivia, and Ancud or San Carlos and Castro Islands, Chile. In many instances the injury occasioned by these weevils was quite noticeable. A few of the tubers which superficially appeared to be sound were found, on being opened, to be infested with one and sometimes two larvæ or adults. Mr. Sasscer succeeded in keeping two adults alive from May 24 to September 6, during which period they fed but little and then only on foliage of potato. The injury of this species consists of tunnels throughout the potato, as shown in Plate XXXIX, and the work of the two other weevils is very similar.

## DESCRIPTION OF PLATES

PLATE XXXIX. Injury caused by potato weevils. Fig. 1.—A section of a potato from Peru, showing the larva of *Rhigopsidius tucumanus* in its burrow.

Fig. 2.—A section of a potato, showing the burrowings of *Rhigopsidius tucumanus*. The work of the two other weevils is somewhat similar.

XL. *Rhigopsidius tucumanus* Heller. Fig. 1.—Dorsal view.

Fig. 2.—Ventral view. Both views are much enlarged; natural size, 9 mm.

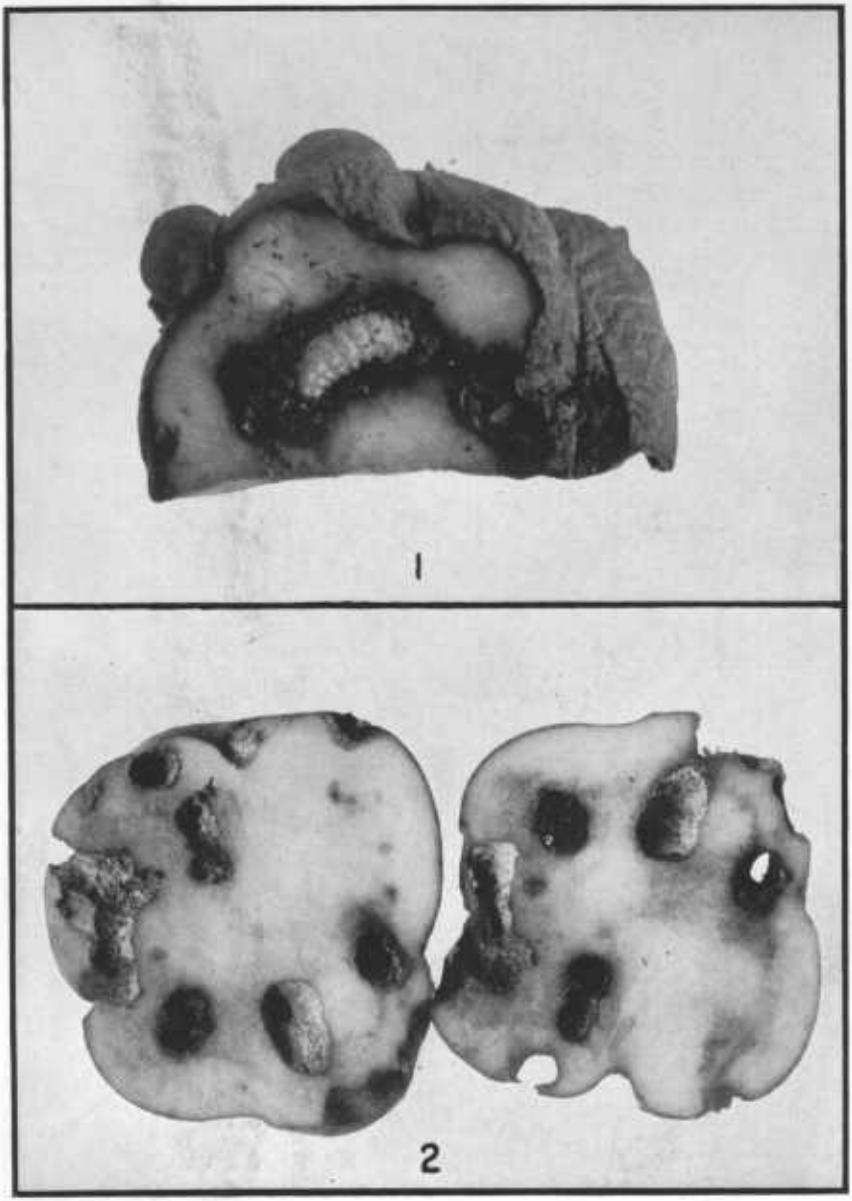
XLI. Figs. 1 and 2.—*Premnotrypes solani* Pierce (much enlarged; natural size, 7 mm.).

Fig. 1.—Dorsal view. In this drawing the beak, scape, and tibiæ are foreshortened, which gives an idea of even greater differences from the succeeding species than really exist.

Fig. 2.—Ventral view.

Fig. 3.—*Trypopremnon latithorax* Pierce (much enlarged; natural size, 6 mm.). Dorsal view. In this drawing the scape and the tibiæ are not foreshortened as much as in the other species. The different attitude of the beak gives a sense of greater divergence than occurs, as can be seen from the side view of the head and prothorax (see text figs. 1 and 3). The ventral view resembles very closely that of *Premnotrypes solani*.

The drawings which accompany this article were made by Mr. Harry B. Bradford.



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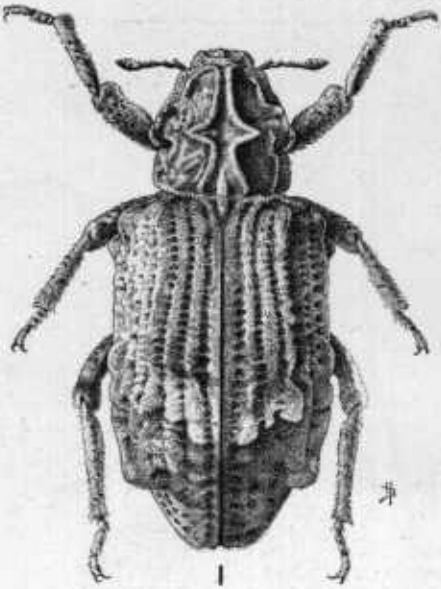

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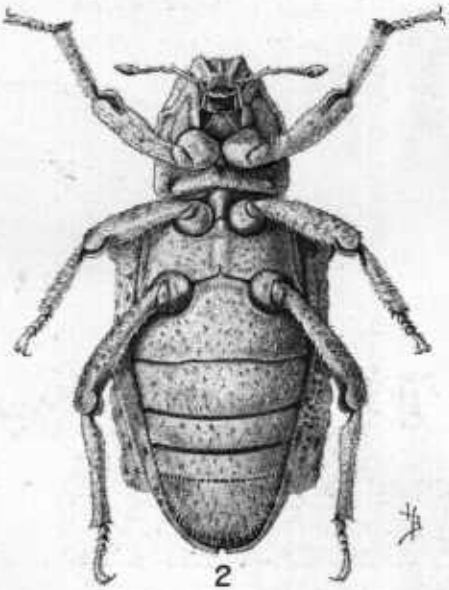

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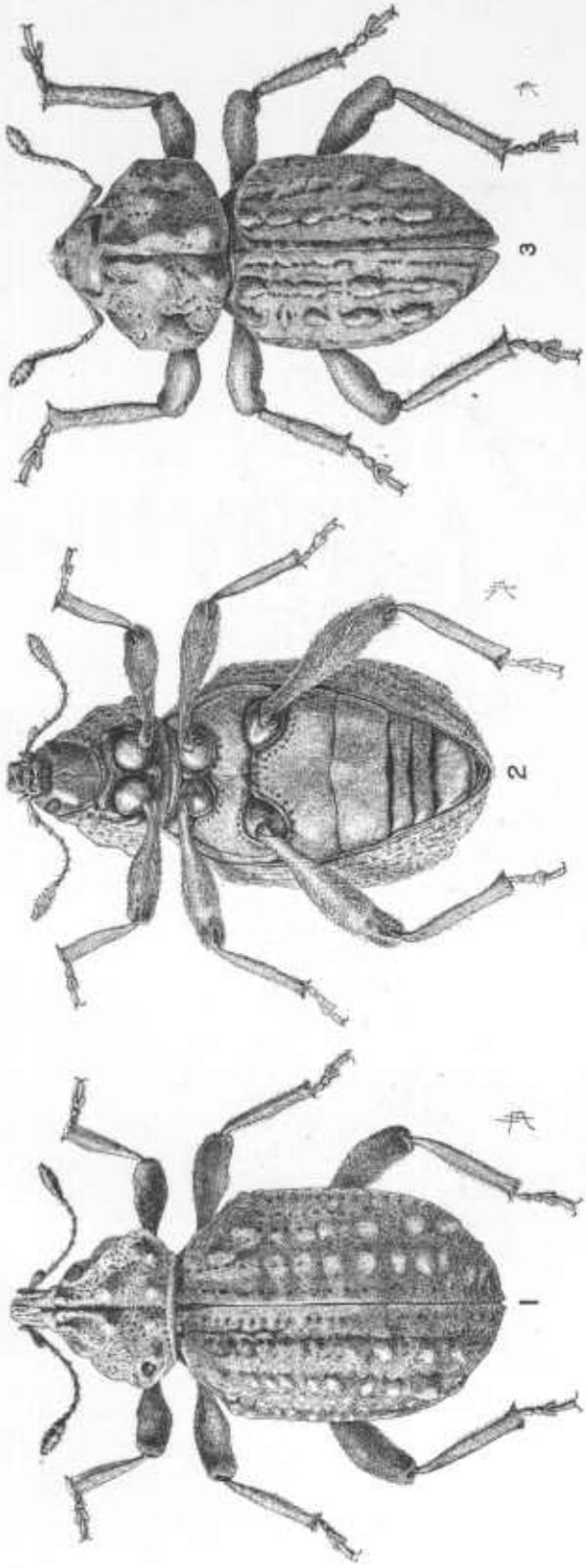
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